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METHOD FOR MANUFACTURING RIBBON-FORM ROPE

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References Cited:	Japanese Kokoku Utility Model No. Sho 31[1956]-19399  Japanese Kokoku Utility Model No. Sho 31[1956]-10542
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[There are no amendments to this patent.]

### Brief description of the figures

Figure 1 is an oblique view illustrating the [ribbon-form] twisted rope obtained in an application example of this invention. Figure 2 is a partially cut oblique view of a coated twisted rope [of wire] for forming the coated twisted rope.

### Detailed explanation of the invention

This invention pertains to a method for manufacturing a ribbon-form rope composed of a plurality of twisted ropes set side by side and integrally embedded in rubber or synthetic resin to form the ribbon shape.

As a type of special rope, this type of ribbon-form rope has been used as hoisting rope or balance rope in elevators, etc. In order to eliminate the back-twisting tendency of the conventional twisted ropes, the twisted ropes are combined to form a flat belt structure. This type of ribbon-form rope is routinely used.

As an example, twisted ropes, each of which is made of four strands free of the core strand, are set side by side to form the longitudinal twisted rope group. Then, in the width direction, lateral wires are set and inserted through the core portions of the four-strand twisted ropes to form a knitted zigzag configuration as the ribbon-form rope. However, this knitting operation requires manual operation, and it has a low efficiency. When this method is adopted in manufacturing the long ribbon-form ropes for use in the elevators of pits of coal mines, much labor and time are needed.

Even when the aforementioned ribbon-form rope is manufactured with much man-hours, because lateral wires are used to knit the longitudinal twisted rope group, the longitudinal twisted ropes have to be made of four strands so that there is no core strand. As the twisted ropes have little strand gap and have a high rigidity, and they are knit tightly to each other, the obtained ribbon-form rope has poor softness and a very high rigidity. Consequently, when the ribbon-form rope is used as the balance rope that hangs in the lower portion for connecting elevators that may be ascending/descending alternately, the high rigidity leads to a tendency of bulging of the rope instead of the normal bending state. Consequently, the aforementioned bulging portion may make contact with the wall surface of the narrow pits of coal mines, leading to accidents of collapse of the wall surface of the pit, or, even when no accident takes place, it still causes unstable up/down movement of the elevators. This is undesired. Also, for the ribbon-form rope prepared by knitting with lateral wires, the lug portions of the lateral wires become the object of wear. Consequently, the lifetime of the ribbon-form rope becomes shorter. In this case, when on-site repair is performed, the aforementioned knit structure leads to significant difficulty in performing a complete on-site repair.

The purpose of this invention is to solve the aforementioned problems of the conventional technology by providing a type of ribbon-form rope characterized by the fact that it makes unnecessary the man-hours needed for the manual knitting operation, allows mass production, and permits selection at will of the flexibility, rigidity, and other properties as well as various specifications of the ribbon-form rope body. Also, the ribbon-form rope of this invention has a high wear resistance, a high corrosion resistance, and a long service life.

In the following, an application example of this invention will be explained with reference to figures. As shown in Figure 2, first of all, several steel strands are twisted in an S-twist or Z-twist to form a plurality of wire twisted ropes (1). For each twisted rope (1), the outer periphery is coated with a flexible material, such as rubber or a synthetic resin material to form coating layer (2), forming coated twisted ropes (3). Said coated twisted ropes (3) are aligned and set side by side with the S-twist and Z-twist arranged alternately, as shown in Figure 1. Then, each contact portion is bonded as explained below to form ribbon-form rope (4) with a specified width. That is, heat treatment is performed to soften coating layer (2), so that coated twisted ropes (3) are fused to each other.

As explained above, twisted ropes (1) can be prepared as the raw material from strands made of various materials and with different specifications. Also, the desired coating material may be selected for coating said twisted ropes (1) to form coating layer (2), forming coated twisted ropes (3). Then, depending on the requirements of the specific use, several groups of the twisted ropes are set side by side and bonded to each other by the aforementioned means. Consequently, it is possible to select the length, width and thickness of the ribbon-form rope as needed in manufacturing to form the desired ribbon-form rope. It differs from the aforementioned manual operation method in that the production is easy, mass production can be carried out, and the ribbon-form rope of this invention has higher wear resistance and corrosion resistance than the conventional products. Also, because twisted ropes (1) are laid only in the longitudinal direction of the ribbon-form rope body, and they are embedded integrally in the coating material. The ribbon-form rope of this invention differs from the aforementioned knit-type flat rope in that it has appropriate softness, flexibility, and rigidity. Also, as explained in the above, by selecting [properties] beforehand, the desired ribbon-form rope can be manufactured in a relatively easy way.

Also, because the ribbon-form rope is formed by setting the coated twisted ropes with their twisting directions arranged alternately, the back-twisting tendencies of the neighboring wire twisted ropes cancel each other, so that the internal stress of the ribbon-form rope can be eliminated.

Claim

A method for manufacturing ribbon-form rope characterized by the fact that it is comprised of the following steps: a step in which a layer of rubber, synthetic resin or other flexible material in a specified thickness is coated on the outer layer of twisted ropes of wire to form coated twisted ropes; and a step in which the coated twisted ropes are set side by side in contact with each other, with the twisting directions of the twisted ropes of wire set alternately, and the contact portions are fused to form a ribbon-form body with the desired width and length.

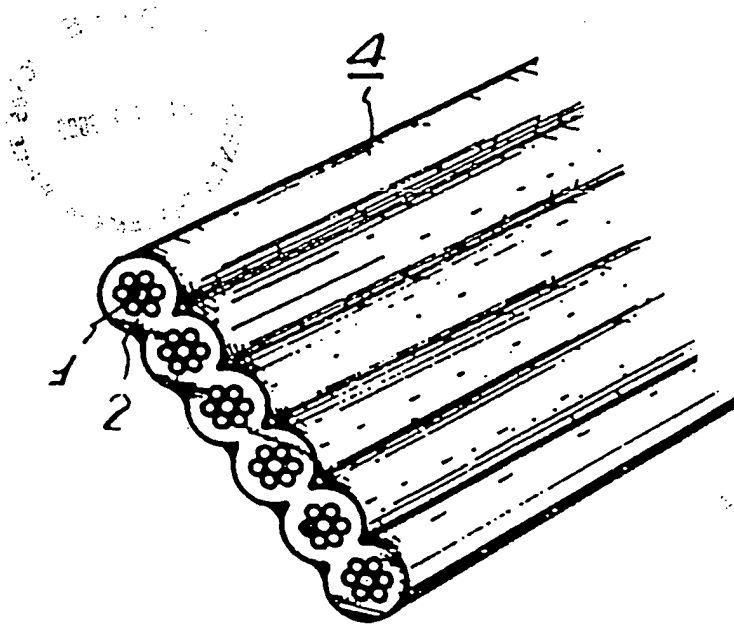


Figure 1

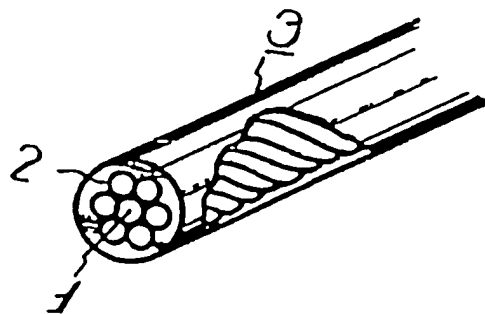


Figure 2

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